CCD characterization news from DES

Gary Bernstein (U. Penn)

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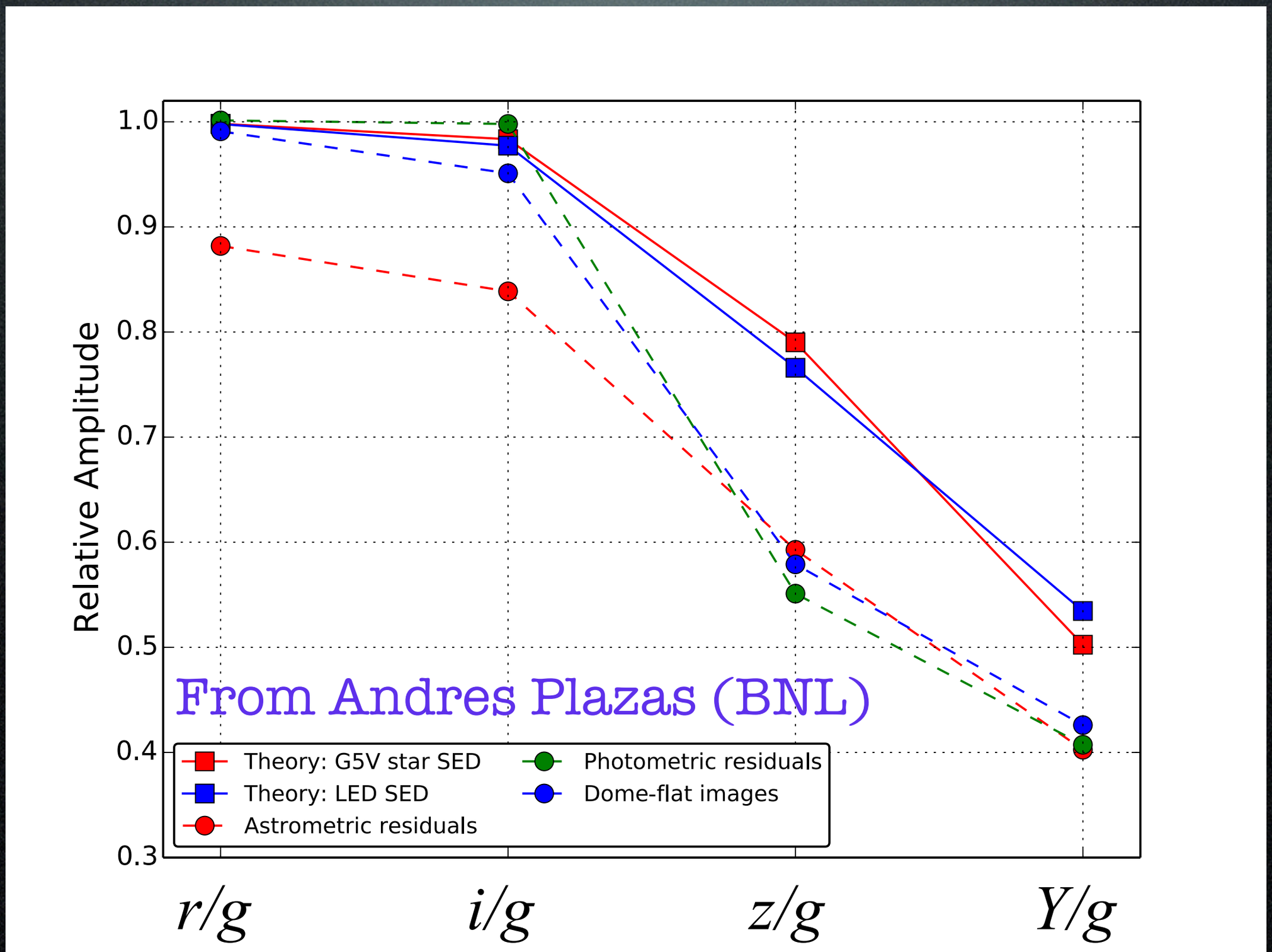
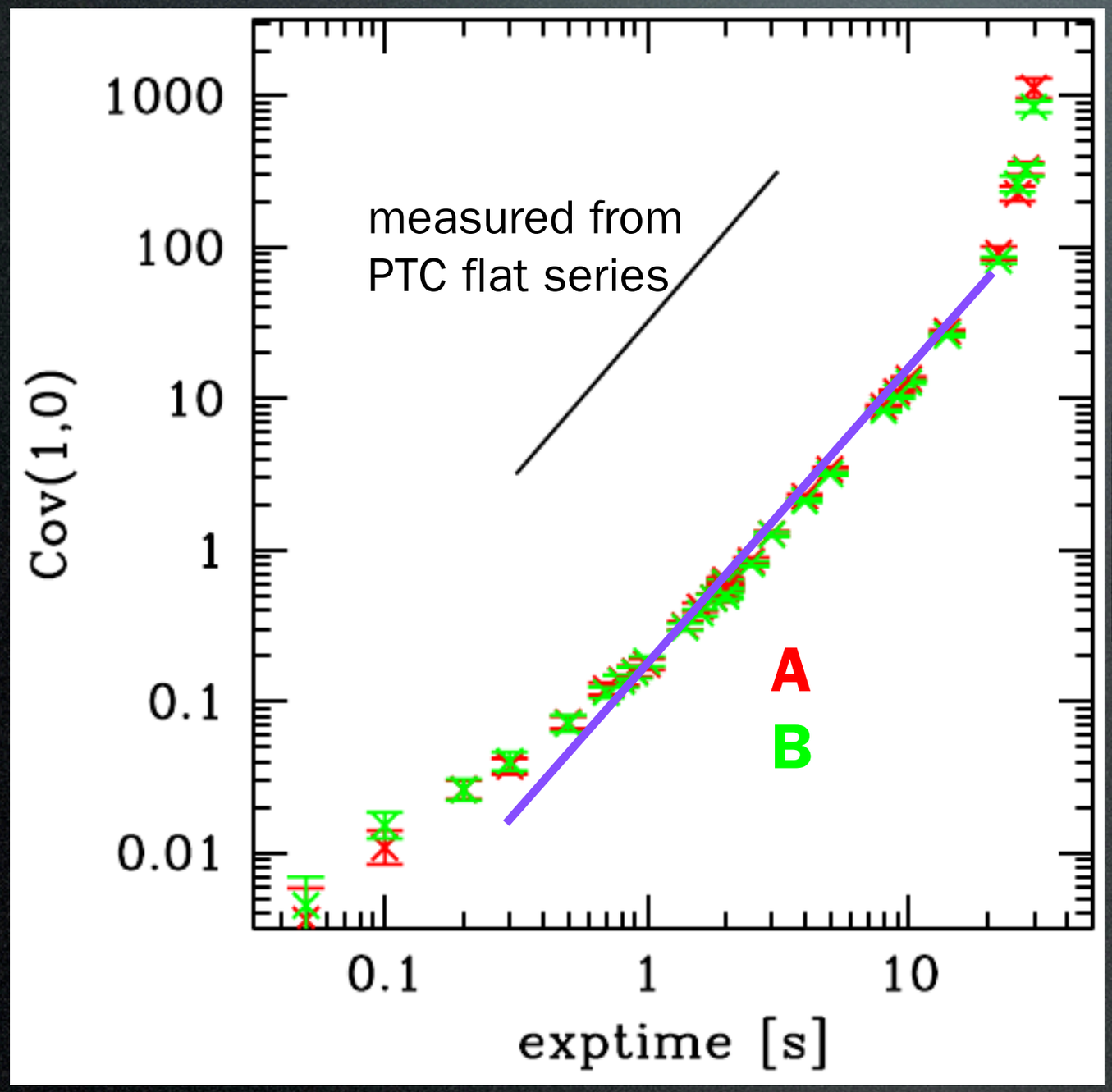
Tree ring amplitudes scale with wavelength (roughly) as expected.



Fitting the Antilogus et al model of brighter-fatter to DECam data

Work by Daniel Gruen (Munich)

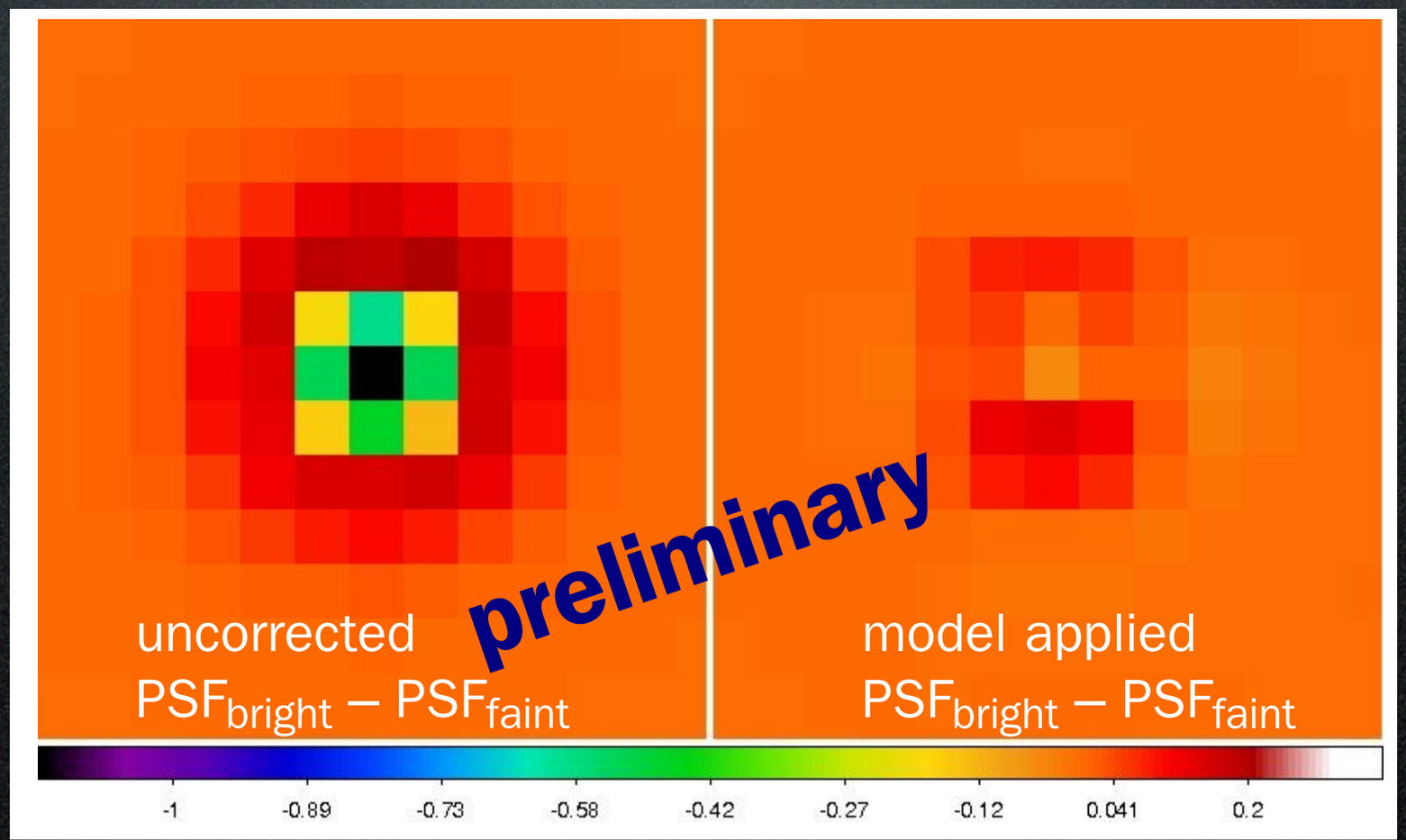


Model predicts:

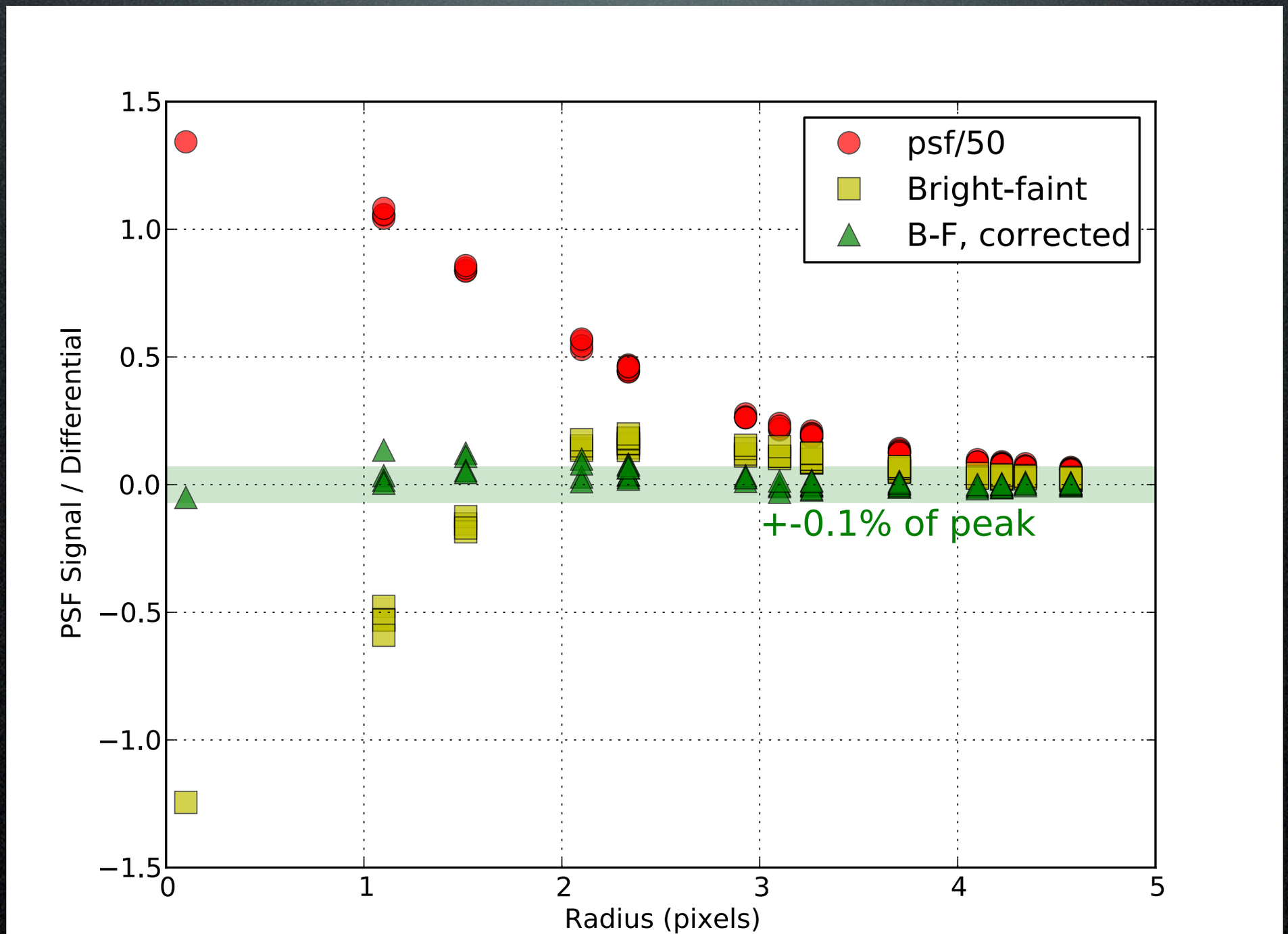
$$\mathrm{cov}(Q_{00}, Q_{ij}) = 2V\mu \sum_{X=T,B,L,R} a_{ij}^{X}$$

flux^2 dependence

Fit the border-shift coefficients to the pixel covariance data.
Then apply reverse shifts to sky images.



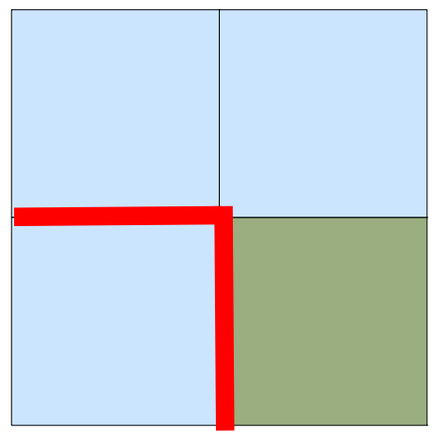
Very first attempt at applying the anti-Antilogus correction reduces the B-F effect in stellar images by 90% !



Covariances in flat field do NOT uniquely determine shift parameters

- There are fewer covariances than independent shift parameters, the further out the worse
- Even with our simple power-law model, covariances are degenerate under

$$
\begin{aligned}
R_0 &\rightarrow R_0 + \Delta \\
T_0 &\rightarrow T_0 - \Delta \\
R_\times &\rightarrow R_\times + \Delta/2 \\
T_\times &\rightarrow T_\times - \Delta/2
\end{aligned}
$$



- Need one more assumption, to be tested on PSF itself

The glowing edge effect depends on flux level. Is this another manifestation of brighter-fatter effect?